

Dead Laundry

Botany Report

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for:
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Nez Perce - Clearwater National Forest

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Introduction

Past management and fire exclusion has resulted in a forest that is composed of seral species forming dense fuels. These forests support increased insect activity and disease which further contributes to fuel loading and increased fire susceptibility. Among other things, this project will implement vegetative management to remove heavy fuels and move stand condition toward a more natural composition to improve species diversity and balance vegetative successional stages across the landscape to create stand conditions that meet Forest Plan goals, objectives, and standards by maintaining ecosystem health and productivity.

Fulfilling these goals would contribute to the overall botanical diversity and maintenance of native plant communities and return ecological conditions closer to their natural range. Floral diversity is dependent upon both early and late seral communities in the project area. Seral plant species requiring some form of disturbance would be benefited from satisfying the purpose and need of this project. However, the potential effects of proposed activities to species and habitats may be both detrimental and beneficial. This document provides an analysis of rare species potentially present and the effects proposed activities may have on them. Specific activities included in the analysis are vegetation management, prescribed fire, temporary road construction and any contributing cumulative effects. For the purpose of this analysis, rare plant species include endangered, threatened, and sensitive species of concern.

Relevant Laws, Regulations, and Policy

Regulatory Framework

Land and Resource Management Plan

The forest plan states that no action will be taken that will jeopardize a threatened and/or endangered species. Management of sensitive species is to ensure population viability throughout their range on National Forest lands and to ensure they do not become federally listed as threatened or endangered. The forest plan supports this direction but does not set specific standards and guides for sensitive plants. The proposed actions are consistent with this direction to the extent that proposed management actions would not adversely affect viability of existing sensitive plant species in the project area.

Desired Condition

Sensitive species are defined in the Forest Service Manual (FSM 2670.5) as “those plant and animal species identified by the Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers, density, or habitat capability that reduce a species/existing distribution.” In FSM 2670.22, management direction for sensitive species is in part, to ensure that species do not become threatened or endangered, because of Forest Service actions and to maintain viable populations of all native species. The most recent update to the sensitive species list became effective in May 2011. The Forest Service must evaluate impacts to sensitive species through a biological evaluation.

Federal Law

Endangered Species Act

Threatened and endangered species are designated under the Endangered Species Act. It is the policy of Congress that all Federal departments shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of this purpose (ESA 1531.2b). Three plants listed as Threatened in

the context of the Nez Perce – Clearwater National Forest and are addressed under the ESA. The Threatened plants are Macfarlane’s four-o’clock (*Mirabilis macfarlanei*), water howellia (*Howellia aquatilis*) and Spalding’s catchfly (*Silene spaldingii*). None of these listed species occur in the Clearwater Basin, and thus are not necessary to further address in this report. Whitebark pine (*Pinus albicaulis*) is Proposed for listing.

Topics and Issues Addressed in This Analysis

Purpose and Need

One component of the projects purpose and need is the restoration of forest vegetation to a healthy condition. While the botanical resource does not directly drive this need, it will generally be benefited by fulfillment of the proposed actions.

Resource Indicators and Measures

The effect on potentially suitable habitat, measured in acres, is the primary indicator used in the analysis.

Methodology

Analysis included study of aerial photos and topographic and forest habitat maps to identify potential habitat for plants of concern and to direct field surveys. Individual species requirements were reviewed and appropriate modeling criteria selected to determine which species or corresponding habitat would be expected to occur in the project area.

The basic mapping unit used is the Habitat Type Group (HTG). This classification groups similar forest habitats into functional categories based upon vegetative type, moisture and temperature characteristics. For some species, these units are useful to match species criteria to potential habitat. For other species, the Habitat Type Group itself may not be a good indicator of suitable habitat, but may provide the microsites the species requires. Other species may have more specific habitat parameters that enable more precise modeling than the HTG, while others have habitat that may be digitally selected from air photos. Specific criteria for species habitat modeling is found in the project file.

Using GIS, the habitat units important to sensitive plants were identified and mapped for the project area. Locations of the proposed activities were evaluated against the habitat groupings to determine which activities would occur in those habitats. Each activity occurring in potential habitat was evaluated based on the criteria important for each species. Forest personnel have surveyed large portions of the project area for the presence of sensitive plant species and determination of suitable habitats.

Based on the results of research, field work and GIS analysis; direct and indirect effects are discussed for general species habitat groups. Direct effects could result from vegetation management, prescribed burns, and road construction. Indirect effects for some species may include the expansion of weeds and the mitigating treatments of these infestations or changes to the forest canopy that may affect light and temperature regimes. Cumulative effects are the overall effects to species from past, present and reasonably foreseeable future projects. Historically such effects on individual species were not measured or noted. However, the past effects on general habitat condition can be qualified and matched to species dependent on a particular habitat.

Information Sources

Information sources contributing to resource analysis consists of species-specific assessment and research provided from a number of agency, State and academic sources. FS data bases such as VMap, FS Veg, and GIS features provide information used in modeling of existing conditions and effects. Field surveys in 2019 contributed greatly to field knowledge.

Incomplete and Unavailable Information

Parameters used to model potentially suitable habitat can vary greatly from species to species. Some species have a high affinity for ecological factors and features that are easily defined obtainable from various data bases and information sources. These models are believed to provide a good approximation of the habitat on the ground. Other species are very general in occurrence and do not seem to be tied to clearly definable habitat characteristics. In such a case only very general modeling is possible. For these species a broad, conservative approach is taken to increase the likelihood that potential habitat is included in the analysis.

Spatial and Temporal Context for Effects Analysis

Direct/Indirect Effects Boundaries

The spatial boundary for analyzing the direct and indirect effects to rare plants is the project area. This area is selected because the effects are site specific to areas treated within the project area and will not extend beyond the boundaries, and effects from outside the defined area will likewise not affect the resource within.

Temporally, these effects are considered only for the species potentially affected by this project from the initial habitat transformations in the early 1900s through the proposed and reasonably foreseeable future. This is because that is the approximate age of forest suitable for some later seral species of concern to begin recolonization of managed forests. Thus the effects of past forest activities from that time are manifest approximately to the present time. An accounting of these past activities is provided in the cumulative effects discussion.

Cumulative Effects Boundaries

The spatial boundaries and reasons for analyzing the cumulative effects are the same as for direct/indirect effects.

The temporal boundaries and reasons for analyzing the cumulative effects are the same as for direct/indirect effects.

Affected Environment

Existing Condition

The forests of the project area are dominated by seral species due to past fire exclusion. Seral species such as Ponderosa pine, white pine and larch are present, but reduced from historic levels. Overall forests are dense and vegetatively simplified compared to historic conditions that were shaped by disturbance to be more diverse and complex. Habitat for late seral species has generally increased with succession,

while species with an affinity for more open conditions have likely declined. In the transitory habitats weeds have simplified the plant communities over time.

Six species of concern are known to occur in the project area, but potentially suitable habitat for several others is present. Given the extensive area of suitable habitat for some of the species of concern, it is anticipated that additional undocumented populations may occur.

Federally Listed Species

Current U.S. Fish and Wildlife Service (USFWS) direction indicates two Threatened plant species, Macfarlane's four-o'clock (*Mirabilis macfarlanei*) and Spalding's catchfly (*Silene spaldingii*) are to be addressed for projects occurring in Idaho County. Past assessments and direction provided by the USFWS indicate that habitat for these species is limited to the Salmon River basin on the Nez Perce unit of the Forest, which excludes the project area. The Threatened, Water howellia (*Howellia aquatilis*) does not occur in Idaho County. Thus, threatened species will not be further addressed in this report.

Whitebark pine (*Pinus albicaulis*) is currently considered Proposed for federal listing by the USFWS. Whitebark pine occurs in open subalpine forests. On northern part of the Forest it generally does not form stands below approximately 6,800 feet elevation; however, scattered individuals may occur at slightly lower elevations. Only about 12 acres of ground is found above the preferred elevation in the project area. Scattered individuals may be found along the high ridge along the south boundary in the Moose Butte area.

Sensitive Species

Five sensitive plant species are known to occur in the project area, while suitable habitat exists for an additional fourteen others as indicated in Table 1, which summarizes potential habitat. Acres values are based upon modeling of potentially suitable habitat. Some models give a very close approximation of habitat present, while others are more general and may include some area that is not presently suitable due to current seral stage. Other habitat values were obtained by digitizing suitable ground based upon photo interpretation. Sensitive species not included in the table are not suspected to occur in the project area, nor is suitable habitat present based upon existing information or habitat modeling.

Table 1. Potential Sensitive Plants within the Project Area

| Common and Latin Name | Presence | Habitat/Community Type | Potential Habitat (acres) |
|--|-----------|---|---------------------------|
| Maidenhair spleenwort <i>Asplenium trichomanes</i> | Potential | Rocky seeps and cliff crevices associated with maritime forests in the Clearwater Basin. | 87 |
| Deerfern <i>Blechnum spicant</i> | Yes | Mid-elevations of shaded, mature cedar and western hemlock, often riparian. | 15,324 |
| Lance-leaf moonwort <i>Botrychium lanceolatum</i> var. <i>lanceolatum</i> | Yes | Shaded moist sites under various conifers, usually western red cedar; occasionally meadows. | 2,818 |
| Mingan moonwort <i>Botrychium minganense</i> | Yes | Shaded moist sites under various conifers, usually western red cedar; occasionally meadows. | 2,818 |
| Mountain moonwort <i>Botrychium montanum</i> | Potential | Shaded moist sites under various conifers, usually western red cedar. | 2,818 |
| Northern moonwort <i>Botrychium pinnatum</i> | Potential | Transitional habitats in grasslands and meadows. Occasionally forests. | 56 |

| Common and Latin Name | Presence | Habitat/Community Type | Potential Habitat (acres) |
|--|-----------|---|---------------------------|
| Least moonwort <i>Botrychium simplex</i> | Potential | Transitional habitats in grasslands and meadows. Occasionally forests. | 56 |
| Green bug-on-a-stick <i>Buxbaumia viridis</i> | Potential | Moist grand fir or cedar forests on large decayed logs and ash soils. | 16,587 |
| Constances bittercress <i>Cardamine constancei</i> | Potential | Breaklands and stream terraces, in maritime environments of low-elevation river canyons; coastal disjunct communities. | 343 |
| Clustered lady's-slipper <i>Cypripedium fasciculatum</i> | Yes | Partial shade of mature warm grand fir or Douglas fir. | 7,887 |
| Light moss <i>Hookeria lucens</i> | Potential | Wet sites in humid coniferous forest, occasionally submerged and generally close to water courses. | 7,803 |
| Chickweed monkeyflower <i>Mimulus alsinoides</i> | Potential | Shady moist places, especially moss mats on cliffs in low, maritime forests. | 87 |
| Spacious monkeyflower <i>Mimulus ampliatus</i> | Potential | Seeps, springs and seasonally wet ground in grasslands and dry forest openings. | 269 |
| Sweet coltsfoot <i>Petasites frigidus</i> var. <i>palmatus</i> | Potential | In the Clearwater Basin this species is found in the riparian and shores of the larger streams and rivers. | 278 |
| Naked Rhizomnium <i>Rhizomnium nudum</i> | Potential | Moist substrates at low to moderate elevation in cool to warm mesic forests. Often riparian. | 16,202 |
| Evergreen kittentail <i>Synthyris platycarpa</i> | Potential | Endemic to the Forest, in moist grand fir forests and cooler western red cedar above 4,500 ft. The range is strongly associated with the grand fir mosaic. | 7,743 |
| Sierra woodfern <i>Thelypteris nevadensis</i> | Potential | A coastal disjunct species limited to the North Fork Clearwater Basin. Habitat is seepy ground and stream corridors in cool and moist western redcedar forests. | 906 |
| Short style tofieldia <i>Triantha occidentalis</i> ssp. <i>brevistyla</i> | Potential | In the Clearwater Basin this species is found in the riparian and shores of the larger streams and rivers. | 278 |
| Idaho barren strawberry <i>Waldsteinia idahoensis</i> | Yes | Endemic to north-central Idaho, cool grand fir and western red cedar generally between 3,500 to 5,500 ft, transitional/edge habitats as well as under canopy. | 23,323 |

Environmental Consequences

No Action Alternative

Since there are no management activities proposed under this alternative, there would be no effects on plant species or habitats. However, changes in stand structure would be expected through time, some of which would alter habitats that are suitable for some sensitive plant species. In some cover types, forest openings may occur as seral species decline. In more mixed-conifer forest types, succession would continue to progress, resulting in a decline in size and frequency of small openings and forest gaps. In general, species requiring later seral forests would see an improvement in habitat quality and species with poor dispersal mechanisms would have an increased opportunity for establishment. Species requiring more open conditions would likely decline barring the absence of significant fire or other forest clearing event such as severe wind or disease. The increased severity of wildfire is possible due to the increased fuel build up in areas of past fire exclusion. Such an event would favor early seral species, while reducing or eliminating habitat for late seral species.

Proposed Action

The effects analysis is based on evaluation of the proposed management activities occurring in potentially suitable habitat and the potential for those activities to directly or indirectly effect plant populations or habitat characteristics. Effects on sensitive plant species by the management activities of this project are summarized in Table 2. Acres are rounded to the nearest whole number.

Direct and Indirect Effects

The primary management activity that may affect species or habitats of concern would be timber harvest, particularly the regeneration harvests that subject the habitat to more direct mechanical disturbance and indirect alteration of the light, temperature and moisture regimes that determine distribution for most plants. Early seral species may benefit from such changes, but later seral species would decline or be extirpated. The implementation of intermediate treatments has some potential for direct mechanical harm during implementation, but generally the overall habitat conditions likely would not change enough to harm most late seral species. In this project mechanical hand treatments and old growth enhancement efforts are both included under intermediate treatments since both will selectively remove trees or fuels, while leaving the stands largely intact. Much of the preferred habitats utilized by later seral species are generally associated with riparian areas that are excluded from proposed units or protected by application of PACFISH riparian buffers (see Aquatics report).

This project proposes opening sizes that will be greater than 40 acres. This size of opening poses no additional effects or impacts to species of concern. The quantitative treatment of potential habitat affected provided in this analysis captures the effects to habitat regardless of the size or distribution of disturbance areas.

Prescribed fire is generally implemented under moderated conditions that allow fuels to be treated without displacing large areas of forests. While direct effects to plants on the ground can be significant at implementation, the overall habitat through time is not substantially changed. However, some localized areas may burn severely and result in habitat altering changes. In the riparian areas of the moister forest types it is less likely that fire would carry with enough severity to appreciably alter habitat; however there is some potential for this. Species requiring more open habitats such as grasslands, savannahs or transitory habitats could benefit from fire that reduces conifer or brush encroachment; however, invasive weeds could increase in such areas as a response to the disturbance. Habitats for sensitive plant species will undergo a mix of beneficial to detrimental effects depending upon the severity and placement of fire and the individual species ecology. With these treatments plants may be harmed upon implementation, but the general habitats that determine plant distribution would not appreciably change overall.

Prescribed fire is proposed near the higher elevation south boundary of the project area. This is in vicinity of marginal whitebark pine habitat. It is not confirmed that whitebark pine is present, though it is considered likely. These high subalpine areas have little fuel and it is not anticipated that the fire will move into the higher elevations where there is more potential for whitebark pine. In addition, there is no overlap in proposed fire polygons and the elevation generally supportive of whitebark pine. For this reason, it is anticipated that the project will have No Effect on whitebark pine.

Temporary roads are a direct disturbance to suitable habitats. Temporary road segments were sorted by potential habitats for sensitive plant species, and it is assumed that for each mile of road constructed approximately 2.5 acres of habitat would be reduced over the short term. Recovery of such sites could be relatively rapid for species such as Idaho barren strawberry or evergreen kittentail, which is known to invade disturbed ground, but for late seral species such as clustered lady's slipper many decades may be needed before the habitat is again suitable. System roads generally would result in permanent loss of habitat for sensitive species requiring late successional forests. While the proposed permanent road passes

through modeled potential habitat for some rare plant species, the current state of the forest makes it unlikely that occurrences exist at the present time. As will temporary roads the system road would be a benefit to rare species preferring open conditions and transitory habitats.

Late successional species such as deerfern, most moonworts, green bug-on-a-stick moss, and clustered lady's-slipper would see some reduction in habitat due to regeneration harvests that would reduce potential habitat. Some moonwort occurrences are within unit boundaries, but are associated with old growth western redcedar groves that will fall out of units upon implementation. Intermediate harvest may mechanically impact some plants of these species should they be present; however, the overall habitat conditions would likely remain suitable to support the species into the future. Other species such as Constance's bittercress, evergreen kittentail and Idaho barren strawberry would be benefited though increases in preferred edge habitats and early successional conditions, though some harm would come to existing plants if they should be present.

Table 2 summarizes the effect of proposed management activities on sensitive plant species habitat in the project area.

Table 2. Potential Sensitive and Proposed Plant Habitat Affected (acres)

| Species | Activity | Proposed Action |
|---|-----------------|-----------------|
| Maidenhair spleenwort <i>Asplenium trichomanes</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Deerfern <i>Blechnum spicant</i> | Regeneration | 1,664 |
| | Intermediate | 734 |
| | Prescribed burn | 36 |
| | System roads | 3 |
| | Temporary roads | 25 |
| Lance-leaf moonwort <i>Botrychium lanceolatum</i> var. <i>lanceolatum</i> | Regeneration | 213 |
| | Intermediate | 163 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 6 |
| Mingan moonwort <i>Botrychium minganense</i> | Regeneration | 213 |
| | Intermediate | 163 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 6 |
| Mountain moonwort <i>Botrychium montanum</i> | Regeneration | 213 |
| | Intermediate | 163 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 6 |
| Northern moonwort <i>Botrychium pinnatum</i> | Regeneration | 0 |
| | Intermediate | 5 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Least moonwort | Regeneration | 0 |

| | | |
|---|-----------------|-------|
| <i>Botrychium simplex</i> | Intermediate | 5 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Green bug-on-a-stick <i>Buxbaumia viridis</i> | Regeneration | 1,714 |
| | Intermediate | 352 |
| | Prescribed burn | 321 |
| | System roads | 2 |
| | Temporary roads | 26 |
| Constances bittercress <i>Cardamine constancei</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 1 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Clustered lady's-slipper <i>Cypripedium fasciculatum</i> | Regeneration | 982 |
| | Intermediate | 187 |
| | Prescribed burn | 21 |
| | System roads | 3 |
| | Temporary roads | 13 |
| Light moss <i>Hookeria lucens</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Chickweed monkeyflower <i>Mimulus alsinoides</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Spacious monkeyflower <i>Mimulus ampliatus</i> | Regeneration | 1 |
| | Intermediate | 0 |
| | Prescribed burn | 7 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Sweet coltsfoot <i>Petasites frigidus</i> var. <i>palmatus</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Whitebark pine <i>Pinus albicaulis</i> (Proposed) | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Naked Rhizomnium <i>Rhizomnium nudum</i> | Regeneration | 1,664 |
| | Intermediate | 734 |
| | Prescribed burn | 36 |
| | System roads | 3 |
| | Temporary roads | 25 |
| Evergreen kittentail <i>Synthyris platycarpa</i> | Regeneration | 811 |
| | Intermediate | 69 |

| | | |
|---|-----------------|-------|
| | Prescribed burn | 368 |
| | System roads | 0 |
| | Temporary roads | 18 |
| Sierra woodfern <i>Thelypteris nevadensis</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Short style toefieldia <i>Triantha occidentalis</i> ssp. <i>brevistyla</i> | Regeneration | 0 |
| | Intermediate | 0 |
| | Prescribed burn | 0 |
| | System roads | 0 |
| | Temporary roads | 0 |
| Idaho barren strawberry <i>Waldsteinia idahoensis</i> | Regeneration | 2,845 |
| | Intermediate | 867 |
| | Prescribed burn | 237 |
| | System roads | 2 |
| | Temporary roads | 40 |

Effects Determinations

Determination of effects on rare plant species by management activities of this project are summarized in the table below. This table includes all plant species on the Nez Perce - Clearwater National Forest sensitive list as well as plants federally listed under the ESA, which allows this document to serve as both the biological evaluation and biological assessment for this project. There is some potential for impacts to several species as indicated based upon habitat presence and occurrence. Treatments over the large portion of the habitat would not change the local environment enough to significantly harm these species should they be present. Any of these species if present may be impacted by the proposed management activities, but due to low percentage of habitat undergoing potentially harmful treatments there would be no concerns for the overall species viability.

Table -2 Summary of Effects for Threatened, Proposed and Sensitive Plant Species

| Plant Species | Known Occurrence | Potential Habitat Present | Effects Determination | |
|---|------------------|---------------------------|-----------------------|-----------------|
| | | | No Action | Proposed Action |
| Water howellia <i>Howellia aquatilis</i> | No | No | NE | NE |
| Macfarlane's four-o'clock <i>Mirabilis macfarlanei</i> | No | Yes | NE | NE |
| Spalding's catchfly <i>Silene spaldingii</i> | No | Yes | NE | NE |
| Whitebark pine <i>Pinus albicaulis</i> | No | Yes | NE | NE |
| Maidenhair spleenwort <i>Asplenium trichomanes</i> | No | No | NI | NI |
| Payson's milkvetch <i>Astragalus paysonii</i> | No | No | NI | NI |
| Deerfern <i>Blechnum spicant</i> | No | No | NI | MI |
| Crenulate moonwort <i>Botrychium crenulatum</i> | No | No | NI | NI |
| Lance-leaf moonwort | No | No | NI | MI |

| Plant Species | Known Occurrence | Potential Habitat Present | Effects Determination | |
|--|------------------|---------------------------|-----------------------|-----------------|
| | | | No Action | Proposed Action |
| <i>Botrychium lanceolatum</i> var. <i>lanceolatum</i> | | | | |
| Linear-leaf moonwort <i>Botrychium lineare</i> | No | No | NI | NI |
| Mingan moonwort <i>Botrychium minganense</i> | No | No | NI | MI |
| Mountain moonwort <i>Botrychium montanum</i> | No | No | NI | MI |
| Northern moonwort <i>Botrychium pinnatum</i> | No | Yes | NI | MI |
| Least moonwort <i>Botrychium simplex</i> | Yes | Yes | NI | MI |
| Leafless bug-on-a stick <i>Buxbaumia aphylla</i> (moss) | No | No | NI | NI |
| Green bug-on-a-stick <i>Buxbaumia viridis</i> (moss) | No | Yes | NI | MI |
| Broadfruit mariposa <i>Calochortus nitidus</i> | Yes | Yes | NI | NI |
| Constance's bittercress <i>Cardamine constancei</i> | No | No | NI | MI/BI |
| Buxbaum's sedge <i>Carex buxbaumii</i> | No | No | NI | NI |
| Bristle-stalked sedge <i>Carex leptalea</i> | No | No | NI | NI |
| Many headed sedge <i>Carex sychnocephala</i> | No | No | NI | NI |
| Anderegg's cladonia <i>Cladonia andereggii</i> | No | No | NI | NI |
| Pacific dogwood <i>Cornus nuttallii</i> | No | No | NI | NI |
| Clustered ladyslipper <i>Cypripedium fasciculatum</i> | No | Yes | NI | MI |
| Dasynotus <i>Dasynotus daubenmirei</i> | No | No | NI | NI |
| Idaho douglasia <i>Douglasia idahoensis</i> | No | No | NI | NI |
| Giant helleborine <i>Epipactis gigantea</i> | No | Yes | NI | NI |
| Puzzling halimolobos <i>Halimolobos perplexa</i> var. <i>perplexa</i> | No | Yes | NI | NI |
| Sticky goldenweed <i>Haplopappus hirtus</i> var. <i>sonchifolius</i> | No | No | NI | NI |
| Light hookeria <i>Hookeria lucens</i> | No | No | NI | NI |
| Salmon-flowered desert-parsley <i>Lomatium salmoniflorum</i> | No | No | NI | NI |
| Chickweed monkeyflower <i>Mimulus alsinoides</i> | No | No | NI | NI |
| Spacious monkeyflower <i>Mimulus ampliatus</i> | Yes | Yes | NI | MI |
| Thin sepal monkeyflower <i>Mimulus hymenophyllus</i> | No | No | NI | NI |
| Gold-back fern <i>Pentagramma triangularis</i> spp. <i>triangularis</i> | No | Yes | NI | NI |
| Sweet coltsfoot <i>Petasites frigidus</i> var. <i>palmaris</i> | No | No | NI | NI |

| Plant Species | Known Occurrence | Potential Habitat Present | Effects Determination | |
|---|------------------|---------------------------|-----------------------|-----------------|
| | | | No Action | Proposed Action |
| Licorice fern <i>Polypodium glycyrrhiza</i> | No | No | NI | NI |
| Naked-stem rhizomnium <i>Rhizomnium nudum</i> (moss) | No | Yes | NI | MI |
| Mendocino sphagnum <i>Sphagnum mendocinum</i> (moss) | No | No | NI | NI |
| Evergreen kittentail <i>Synthyris platycarpa</i> | No | No | NI | MI/BI |
| Sierra wood-fern <i>Thelypteris nevadensis</i> | No | No | NI | NI |
| Short style toefieldia <i>Triantha occidentalis</i> ssp. <i>brevistyla</i> | No | No | NI | NI |
| Douglas clover <i>Trifolium douglasii</i> | No | Yes | NI | NI |
| Plumed clover <i>Trifolium plumosum</i> var. <i>amplifolium</i> | Yes | Yes | NI | NI |
| Idaho barren strawberry <i>Waldsteinia idahoensis</i> | No | No | NI | MI/BI |

Threatened Species Determination: NE = No Effect; NLAA = Not Likely to Adversely Affect; LAA = Likely to Adversely Affect.

Sensitive Species Determination: NI = No Impact; BI = Beneficial Impact; MI = May impact individuals or habitat but not likely to cause trend toward federal listing or reduce viability for the population or species; LI = Likely to impact individuals or habitat with the consequence that the action may contribute towards federal listing or result in reduced viability for the population or species.

Cumulative Effects

Discussion of cumulative effects for rare plants is addressed through the general trend of the suitable habitat required by these species as a result of past, present and future management actions. It generally is not possible to directly quantify effects of specific activities that are several years or decades old on species of concern today. The status and occurrence of rare plants was completely unknown for much of the management history of the area. Historically the changes in condition and abundance of specific habitats important to these species are also largely unknown. Therefore, the effects of these past projects can only be qualified through general discussions. However, the results of past projects contribute to the current condition, which can be used to discuss and quantify effects of proposed activities on rare plant species.

Past, Present, and Foreseeable Future Actions

The primary management activities that have influenced rare plant habitat in the Dead Laundry area and continue to under the proposed actions include past and present timber harvest, and road construction. Documented timber harvest has occurred in project area since the 1950's when a total of 1,502 acres, approximately evenly split between even aged and intermediate methods, was managed. Harvest in the 1960s increased dramatically to 6,337 acres, with 4,094 being more impactive even aged harvest and 2,243 acres being intermediate treatments. Over the 1970s harvest increased to 6,864 acres of harvest. Of this even aged management was 4,353 acres while intermediate harvests involved 2,511 acres. In the 1980s harvest declined to 5,022 acres, with 3,527 acres being even aged harvest and 1,495 being intermediate. In the 1990s harvest dropped precipitously to 462 acres with 299 being even aged and 63 being intermediate. In the 2000s harvest dropped substantially to just 40 acres of even aged management. There is no recorded harvest since that time. Much of the recorded harvest have occurred through the years on the same footprints as several harvest methods are multi-step in nature and have stretched out over years in many cases. The overall trend in the impacts of harvest activities on the ground have

declined dramatically since the end of the 1980s. In addition, advancement in harvest operations and logging technology would further reduce resource impacts.

Road construction activity generally mirrors harvest activity as the roads were primarily constructed to provide access to timber. Most of the current road work in the project area consists of routine maintenance and repairs, though short segments of new temporary roads associated with the project will occur. As shown in the effects table, the addition of new temporary roads will have a small effect on habitat for some rare plant species. While this project will contribute to an increase in road activity, the trend throughout the management history of the project area through time continues to decline overall.

Wildfire activity was irregular before the general fire suppression of the early 1900s. Most wildfire activity in the project area occurred in 1910 and 1919 with 12,897 acres and 2,803 acres burning respectively. After effective fire suppression was initiated substantial fires have been rare with 233 acres burning in the 1930s, 90 acres burning in the 1980s and 1,849 acres burning in 2005. There have been many small fires over this time period that likely have not been recorded or collectively did not involve a lot of ground and have had little effect at the landscape level. With increased fire suppression such disturbances generally have been in decline, but changes in wildfire management and fuel build up after decades of suppression contribute to increased fire likelihood into the future. The general habitat trend for late successional plant species would have increased due to succession during times of suppression, but anticipated trends may contribute to some reduction in later seral vegetation due to harvest or the potential occurrence of a large fire. Habitat for rare plant species continues to expand or retract depending upon individual species preference for open or closed habitats.

Ongoing and foreseeable actions within the proposed activity areas consist of recreation, fire suppression and weed treatments. Motorized recreation and dispersed-camping activities may increase in the future, but the effects would be largely limited to designated existing routes and dispersed-camping areas, especially after the implementation of travel planning. This would result in fewer acres affected by these activities overall with a reduction in impacts to rare plant species. The effects of trail work on sensitive species habitats is generally negative, but very small. Maintenance of these travel routes is considered routine and ongoing, with virtually no effects to the habitat which they pass through.

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Fire suppression activities would be anticipated, but the occurrence, extent, and/ or intensity of suppression efforts cannot be estimated or predicted. In addition, noxious weed treatments may occur periodically in the project area. These are spot applications not expected to affect species of concern because rare species generally do not grow in treatment areas and because non-target species are avoided by spray crews. These activities are considered ongoing and routine with virtually no effects to the habitats of concern or rare species. Successful weed treatments would benefit rare plant species through removal of competing weeds.

No Action

The no action alternative would produce no additional effects on potential rare plant habitat, as compared to past activity levels. The progression of forest succession would improve habitat for most sensitive plant species. However, the decline of successional tree species due to competition, disease or insect-caused mortality may cause localized openings and increases in light and fuel loads, which could lead to more

intense wildfires and resource damage. In such cases, older habitat favored by these plant species could see localized declines, but the trend overall would be one of increasing habitat suitability. Conversely, species favored by more open conditions would decline as general forest succession progressed absent of large-scale disturbance such as wildfire.

Proposed Action

This alternative adds short-term disturbance to this landscape through vegetation management, prescribed fire and temporary road construction. These activities along with ongoing activities would result some localized decline in potentially suitable sensitive plant habitat for species requiring late successional habitat. Such a downward trend in habitat quality would not lead to concerns for overall population viability, since these habitats are common in much of the project area. Recovery of suitable habitat in the treatment areas could vary from a few years to several decades depending upon the species. Some of ground to be managed will undergo intermittent treatments that do not necessarily set succession back to an appreciable degree where potential rare plant habitat is concerned. Due to this fact and that large areas of potentially suitable habitat are not being disturbed in the project area as a whole, the overall trends in habitat for these species would be increasing through time with the overall advancement of succession.

Sensitive species requiring open or transitory habitats would see some localized improvements in some treatment areas. This is especially true where habitats are naturally open or trees might be encroaching onto grasslands or shrublands. However, the effects through time on this habitat would be mixed as existing individual plants could be damaged if present. The prescribed burn activity would also contribute to maintenance of such habitat; however, this disturbance could increase weed infestations in susceptible habitats in the area.